iPSCs as a screening tool to predict risk of nonalcoholic fatty liver disease

Grant Award Details

iPSCs as a screening tool to predict risk of nonalcoholic fatty liver disease

Grant Type: Quest - Discovery Stage Research Projects

Grant Number: DISC2-12358

Project Objective: To develop an iPSC-based diagnostic that predicts an individual's risk of developing nonalcoholic fatty liver disease (NAFLD).

Investigator:

Name:	Marisa Medina
Institution:	University of California, San Francisco
Type:	PI

Disease Focus: Liver Disease, Metabolic Disorders

Human Stem Cell Use: iPS Cell

Award Value: $813,000

Status: Active

Grant Application Details

Application Title: iPSCs as a screening tool to predict risk of nonalcoholic fatty liver disease

Public Abstract:

Research Objective

The objective of this proposal is to established undifferentiated iPSCs as a diagnostic tool for the prediction of nonalcoholic fatty liver disease onset and severity.

Impact

Despite the widespread estimated prevalence of NAFLD, there are currently no tools available to predict likelihood of NAFLD susceptibility beyond standard clinical and demographic information.

Major Proposed Activities

- Create an iPSC-based NAFLD risk score (iPSC-RS) by defining threshold values for oleate-induced intracellular lipid accumulation that distinguish iPSCs from NAFLD patients versus healthy controls.
- Validate the iPSC-RS in an independent set of iPSCs from 25 NAFLD cases and 25 healthy controls, and evaluate the it's reproducibility across biological replicates and independent laboratories.
- Compare the validated iPSC-RS to other NAFLD risk predictors based on genomic information alone.

Statement of Benefit to California:

Nonalcoholic fatty liver disease (NAFLD) is a widely undiagnosed condition, and is estimated to impact up to 30% of adults. NAFLD is most prevalent in Hispanics, with the absolute highest levels found in individuals of Mexican ancestry, and thus is relevant to California's LatinX population. As NAFLD is anticipated to become the leading cause of liver transplant, identifying Californians most at risk could address significant gaps in screening and prevention for this serious disease.

Source URL: https://www.cirm.ca.gov/our-progress/awards/ipscs-screening-tool-predict-risk-nonalcoholic-fatty-liver-disease